

# **FAST-SWITCHING SCALABLE OPTICAL INTERCONNECTION DESIGN WITH FAST CONTENTION RESOLUTION**

## **ABSTRACT OF THE INVENTION**

A scalable optical interconnect includes a plurality of transmitters, a multiplexing subsystem able to combine the signals of the plurality of transmitters onto one or more transport fibers according to an orthogonal multiplexing scheme, multiple broadband burst-mode receivers structured and positioned so as to be capable of receiving any signal from any one transmitter of the plurality of transmitters, a distribution subsystem structured so as to be able to distribute independently and contemporaneously the signals of every transmitter to every receiver; and one or more selection subsystems structured and arranged so as to be capable of selecting, in less than 1 microsecond, a single channel from within the orthogonal multiplexing scheme. A method and architecture for distributed contention resolution is also disclosed.